

REMARKS

All claims stand rejected under 35 USC 103 based on Gulati and Bampton as the principal references.

The subject matter of this application, as defined in claim 27 prior to the current amendment, is a method of manufacturing a tank suitable for storing very cold cryogenic liquids. In accordance with claim 27, the tank comprises at least one self-supporting volume unit having a basic form corresponding to a rectangular prism having a first side opposite a third side and a second side opposite a fourth side. The method comprises forming a first plane element by providing first mechanically extruded aluminum profile elements each having a plane part and a stiffening part extending essentially perpendicular to the plane part and having a free distal end relative to the plane part, forming an intermediate element by attaching the first profile elements to each other by their plane parts using friction welding, providing second mechanically extruded aluminum profile elements, forming a stiffener by attaching the second profile elements to each other by friction welding, and attaching the stiffener to the intermediate element to form a first plane element. The method further comprises providing at least second, third and fourth plane elements each having at least one stiffener attached thereto, and attaching the first, second, third and fourth plane elements to each other to form respective sides of the self-supporting volume unit. The stiffeners attached to the plane elements extend only partly through the internal space of the volume unit between opposite sides thereof.

Claim 27 has been amended to specify that the plane parts of the first profile elements are substantially coplanar. This coplanar relationship is clearly shown in FIG. 2.

Gulati discloses a tank having an internal truss frame structure 18, a grillage of stiffeners 27 and stringers 28 attached to the truss frame structure 18, and a thin plate cover 17 attached to the grillage. The truss frame structure, the thin plate cover and the grillage may be constructed from any suitable material that is ductile and has acceptable fracture characteristics at cryogenic temperatures, and Gulati teaches that the preferred material for at least the thin plate cover is steel.

The examiner has indicated in the advisory action mailed January 19, 2011 that she considers the four wall sections forming the tank mid section 10A shown in FIG. 1C of Gulati to be apt counterparts for the profile elements of claim 27. The four wall sections, each comprising a thin plate cover 17 (corresponding to the plane part of the profile element) and stiffeners 27 (corresponding to the stiffening part), are attached together to form the tank mid section. The examiner considers the tank mid section to be an apt counterpart for the intermediate element of claim 27.

Applicant submits that the amendments now made to the independent claims foreclose the interpretation adopted by the examiner. Claim 27, as now amended, requires the plane parts of the first profile elements that are attached to each other to form the intermediate element to be substantially coplanar. In the case of Gulati, no two wall sections of the tank mid section are substantially coplanar.

The examiner relies on Bampton as disclosing friction welding applied to securing parts of a cylindrical tank together. Bampton does not supply the deficiency in Gulati regarding forming the intermediate element by attaching the first profile elements to each other by their plane parts using friction welding, the plane parts of the first profile elements being substantially coplanar as stated in claim 27.

The examiner relies on McLaughlin as showing that it is known to extrude aluminum elements. McLaughlin does not supply the deficiency in Gulati regarding forming the intermediate element by attaching the first profile elements to each other by their plane parts using friction welding, the plane parts of the first profile elements being substantially coplanar as stated in claim 27.

In view of the foregoing, applicant submits that the subject matter of claim 27 is not disclosed or suggested by the cited references, whether taken singly or in combination. Therefore, claim 27 is patentable and it follows that the dependent claims 28-39 also are patentable.

Claim 40 is directed to a tank comprising at least one self-supporting volume unit, the volume unit comprising a first plane element which in turn comprises an intermediate element and a stiffener. As set forth in claim 40, the intermediate element comprises first mechanically extruded aluminum profile elements each having a plane part and a stiffening part extending essentially perpendicular to the plane part and having a free distal end relative to the plane part, the first profile elements being attached to each other by friction welding their plane parts with their plane parts substantially coplanar. The stiffener comprises second mechanically extruded aluminum profile elements attached to each other by friction welding. The stiffener is attached to the intermediate element. The first plane element and second, third and fourth plane elements are attached to each other to form respective sides of the volume unit. The stiffeners of the plane elements extend only partly through the internal space of the volume unit between opposite sides thereof.

The arguments presented above in support of claim 27 are applicable to claim 40, and it follows that claim 40 and the dependent claims 41-46 are patentable.

The arguments presented above in support of claim 40 are applicable also to claim 47, drawn to a volume unit. Therefore, claim 47 is patentable.

Respectfully submitted,

/John Smith-Hill/

John Smith-Hill

Reg. No. 27,730

Chemoff, Vilhauer, McClung & Stenzel, LLP
601 SW Second Ave. Ste. 1600
Portland, OR 97204
Tel. (503) 278-3334
Fax (503) 228-4373
Docket: AWEK.3511